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Forestry and Grazing Hoopa, Calif.

Notes on the Mast Trees of the Hoopa.

By

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Forestry and Grazing

Hoopa, Calif.
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Respectfully submitted:

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Introduction.

In our study of the mast trees of the Hoopa Valley Indian Reservation in northern California, we have accumulated, to a certain extent, notes and information that it might be well to file in the offices of Washington and Spokane at this time.

The study is far from completed but we should like to submit our findings thus far.

The Range Hog.

There are 158 Indian families on the Hoopa and the River Strip. Of this number 138 families own hogs.

It is believed that 1938 may be taken as typical. During that year, 822 swine were sold at a total of $5625.00, and 10,500 lbs. of their own home raised pork, were used to stock the Indian larders. At the end of 1938, there still remained 770 head of Indian own breeding hogs valued at $8645.00.

It is apparent that this range hog industry is important not only to Indian welfare but to the economics of northern California as well. It did not spring spontaneously,

but has been among the Indians for many years.

But this industry could not flourish without the mast trees.

These hogs are sold as "feeders", that is, the purchaser takes them when four or five months old for the purpose of fattening. While on the reservation they rustle their keep in the forest, and most of them go directly from the hillsides to the buyers' trucks. Some Indians feed a little grain as an inducement for the porkers to remain nearby, but the entire lot may be classified as range fed. Feeding plays no important part; most of these hogs taste no grain until they arrive in fattening stys.

Hogs and California.

California imports about 60% of all pork consumed, most of the hogs bought in coming from east of the Rocky Mountains.

Value of Mast.

The fact that so many hogs can, without difficulty, subsist in our forest demonstrates the value of the mast. It also indicates that this industry can be expanded since there are still many acres available as hog range.

It is believed, that so far as range is concerned, our

hogs may easily be multiplied by ten. There is no danger, for the time being, of overgrazing in this direction.

Hog Ranging.

Hog ranging! One immediately visualizes the extensive swine grazing in the cotton states, where hogs are regarded unfavorably by foresters due to their propensity for rooting. Hogs particularly like truffles, the fleshy underground fungi often found on a seedling's roots.

A serious problem, this rooting, since it is practically impossible to secure reproduction. In Louisiana one frequently finds areas where every single seedling has been hog rooted.

But there is no hog rooting in northern California. The ground is too hard. Occasionally one notes a little evidence of a porker's snoot in marshy places, but this is not enuf to matter.

Seedlings.

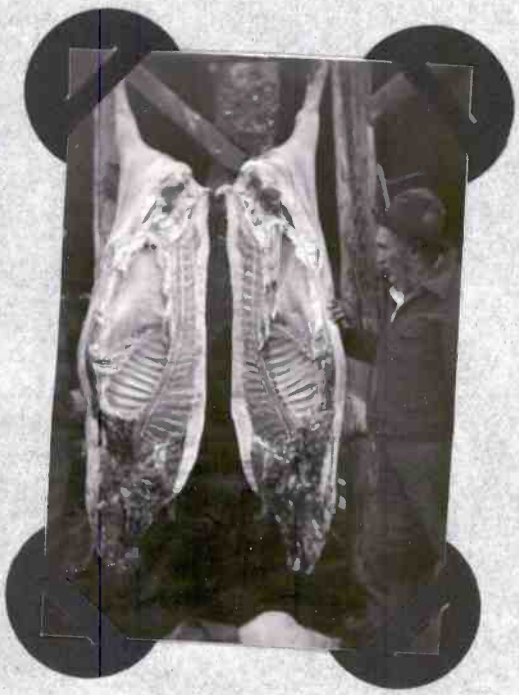
I have never found a hog rooted seedling on the Hoopa Reservation, or in northern California for that matter.

California National Forests.

Hogs are barred from the National Forests in the State of California, not because of rooting, but because they are liable to become a nuisance about the public auto camps within these forests.

Hogs and Fire Setting.

It is believed that hog grazing has aided very materially in the fignt against incendiarism. The warning, "save your hog



This fine porker was butchered by Oscar Brown, Indian, during January 1939. It is a typical range hog, having rustled its keep among the mast trees in the Rock Creek area of the Hoopa.

It had received no grain nor other feed. It was about two and a half years old, and scaled 325 lbs. dressed. The meat was excellent.

range" has probably done much to counteract the argument that fire brings forth good grass, and that it is well to burn the country over periodically on general principles.

Even so, the fireworshippers insisted that before the coming of the white man, the region was subjected to light burning, and that at that time there were more acorns than now. Fire destroys the insect eating the acorns, they claim. To meet this argument, we have drawn upon local Indian tradition.

Tradition

We pointed to the acorn festival held yearly, at which a medicine woman presides. No one is allowed to eat acorns until after this event. Everyone knows why. The first acorns to fall are defective and should not be eaten. The festival is the official O.K. of the medicine woman that the insect laden nuts are off the trees. Eat your acorns. Those that fall hereafter are insect free.

This practice dates from time immemorial. We cited that this medicinal approval would have been unnecessary had the burnings destroyed the acorn eating insects.

Tan Oak Acorns.

The acorns of the tan oak are the most important, and these are highly insect infested.

These acorns are used extensively for food by the Indians

and to a lesser degree by the local whites.

The acorns of the tan oak are gathered in the fall and stored. As needed they are shelled and pulverized. The tannin and other deleterious material is then removed by leeching. This acorn meal is boiled in water to the consistency of a mush, or fashioned into small loaves and baked. This is the most popular way of preparation, yet there is a second method that is also extensively used.

Second Method.

By the second method, the acorns are placed into an open box, sack, or other suitable container, and then submerged in a small, swiftly running stream, or beneath a miniature water fall. Here they remain, with the water rushing among them, day after day for about a year. Then they are retrieved and boiled in their entirety,---shells and all. After boiling, the shells are removed and they are eaten as they are.

The Indian name for acorns prepared by this method is, "TOLTH KIT".

As a food, acorns have a tendency to balance the heavy meat and fish diets of the Indians.

Insects.

Because of the importance of our acorns, a study was made, during the fall of 1938, to determine what insects were preying upon our mast.

In accordance with prescribed instructions, a collection of various nuts and seeds, over a period of time, was sent to the U.S. Bureau of Entomology and Plant Quaranteen, 335 Giannini Hall, Berkeley, Calif.. Mr. John E. Patterson, associate entomologist, took an active part in these investigations. All material was to be examined, observed, and all insects were to complete their cycles.

While this material is still under surveillance, here are the results to date:

Trees	Infested with
Tan Bark Oak (Lithocarpus densiflora)	Balininus sp., lepidoptera
Live Oak (Quercus chrysolepia)	do do
California Black Oak (Q. Kelloggii)	do and Leps
Oregon Oak (Q. Garryana)	Cynipid galls with larvae
Giant Chinquapin (Castanopsis chrysophylla)	No insects found.
Pepperwood (Umbellularia californica)	do
Hazel (Carylus rostrata)	No insects found. No signs of infestation.

Big leaf maple (Acer macrophyllum)	No insects found.
Redbud (Cercis occidentalis)	No insects found. All healthy seeds.
Oregon ash (Fraxinus oregon)	One hymenopterous larva found in seed.
Sugar Pine (Pinus Lambertiana)	No insects but signs of infestation.
Digger Pine (Pinus sabiniana)	Dipterous larvae in seeds. A Midge.

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Insect Eradication.

These, as a group, are important mast trees, and hog grazing would be quite impossible without them. That is why, a request for $1000 for insect control, was listed among our 1940 CCC projects. Apparently it has been approved. This control work will be done exclusively among the tan oaks for the present. This is in accordance with the recommendations of the Burequ of Entomology and Plant Quaranteen at Berkeley, Calif. The work will be directed by their entomologists and will cost the Indian Service nothing.

It is believed that the entire $1000.00 will be applied for enrollees wages who will perform all non technical tasks connected with the project.

It is the custom, among our Indians, in gathering tan oak acorns, to select a tree that has shed rather abundantly.

The acorns of this tree are then examined, and if any show signs of insects, the tree is immediately deserted without its nuts being gathered. They will visit tree after tree, until one is found whose acorns are clean. These acorns, from a so called clean tree, are then taken home and garnered.

In the work of eradication, it is proposed to find trees having infested acorns, and to burn these unclean nuts in pits or large cans.

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It might be well to describe the insects feeding upon our mast:

California acorn weevil, (Balaninus uniformis, Lec.) begins its cycle as a rather beautiful brown beetle about 1/3 inch in length, dressed in yellowish brown scales, with darker forewings.

This beetle is equipped with an exceptionally drill like a snoot with which it drills thru the shells of the acorns. One having pierced the heavy shell, the insect wheels about and deposits its eggs inside the opening. All this happens while the acorn is still on the tree.

The eggs hatch and the larvae begin to feed upon the acorn. They develop into weevils about one fourth inch in length. The weevils remain in the acorn until it falls to

the ground. The weevil then emerges and crawls down into the soil.

The weevil remains in the ground until the following spring when it comes forth as a beetle and attacks fresh acofns.

The beetle does not always emerge the following spring. On some occasions, it remains over until one year later, or the second spring. Thus does nature provide against the extinction of this insect, for some years have a very light acorn crop.

Balaninus uniformis is causing the most trouble. It is believed that about 90% of the infestation is due to this beetle, and that if it could be eliminated there would be no cause for concern. It is particularly active in the acorns of the tan oak.

This insect has a rather wide range, occuring in New Mexico, Utah, California, Oregon, and Washington. It is the only one of its specie inhabiting the Pacific coast.

On the Hoopa we foumd this weevil in the acorns of the following trees:

Tan bark oak. Live oak. California black oak.

We shall concentrate upon Balaninus uniformis when we begin our work of eradication.

The Catalina cherry moth, Melissopus latiferreanus, ranks second in destructiveness.

This pest is a small moth, about one half inch in length; in color it is a dusty bronze or terra cotta with two coppery areas at the tips of the forewings. The moth flies during the early season when the acorns are just setting in. The eggs are laid on the acorns while they are still on the trees.

The caterpillars are white or pinkish, and about one half inch in length when mature. The range is given from Maine to California. There is but one brood. The caterpillars feed inside the acorn and ordinarily consume the entire kernel. When the acorn falls to the ground, the caterpillar leaves, and crawls into the soil or litter. Here it spins a cocoon, and hibernates during the winter. In the spring it appears as a moth.

The Cynipid, Andricus eldoradoensis, ranks third in destructiveness. This is a tiny wasp about one tenth of an inch in length. It makes larval cells inside the acorn and therein lays its eggs. By giving off a fluid, it hardens the acorn so that the larvae may feed thereon. This hardening destroys the food value to animals. The adult insect emerges from the acorn during the early spring.

Other destructive insects found were:

Oak Tineid, Valentinia glandulella

A Gelichid, Gelichia sp

A pyrolid, Phycitinae sp

All three of the above mentioned are small moths whose caterpillars feed on the interior of the acorns; they are not sufficiently common to be of economic importance.

Capitulation on Control.

Acorns infested by insects fall several weeks prior to the normal ones. They are on the ground about two or three weeks before the regular acorn crop. This makes possible the application of control measure, for the infested acorns may be gathered or raked, and then burned in pits or large cans. Thus the unclean nuts may be destroyed before the clean ones begin to fall.

Mr. J.E. Patterson, associate entomologist, U.S. Department of Agriculture, states that this method of control should be feasible and economical in areas like the Hoopa where the acorns are collected for food.

The period for this control is limited to a few weeks in the early fall.

Mr. Patterson states that his organization would be

willing to direct this work of eradication.

Grass or Mast.

Some of our Indians are advocating the burning of our hillsides, and turning them into grass as cattle range. Mere burning would not suffice,--there would also have to be plowing, seeding, and howrowing,--a rather expensive procedure.

And then our valuable hog range would be no more.

After all, our brush generally is nothing more or less than a lot of little mast trees that will eventually grow into a lot of big mast trees. Why not turn our fine hog fange into still finer hog range by excluding fire?

The Hoopa is exceedingly rugged, and the removal of the deep rooted brush and trees may mean erosion. The tan oak is one of the very few large trees able to establish itself on a steep hillside.

Suppose we were able to turn our valuable hog range into cattle fange. How long would it remain that way? Not very long! Klamath weed, St. Johnswort, (Hypericum perforatum L), would soon take possession, as it has done on all other grass land of northern California.

Hogs are much easier to raise than cattle and bring

more money. California needs more hogs. The initial investment is much smaller than it is with cattle.

So why not keep our hog range.

The End.